

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 26

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte LEON C. WILLIAMS,
JENG-NAN SHIAU,
and DAVID J. METCALFE

Appeal No. 1997-4067
Application 08/285,324¹

HEARD: February 22, 2000

Before THOMAS, BARRETT, and BARRY, Administrative Patent Judges.

BARRETT, Administrative Patent Judge.

DECISION ON APPEAL

¹ Application for patent filed August 3, 1994, entitled "Method And System For Image Conversion Utilizing Dynamic Error Diffusion."

This is a decision on appeal under 35 U.S.C. § 134 from the final rejection of claims 1-15.

We reverse.

BACKGROUND

The invention is directed to an image processing method and system that uses dynamic error diffusion, i.e., the error generated from binarizing the value of a pixel is diffused to adjacent pixels based on dynamic selection of a set of weighting coefficients from a plurality of possible weighting coefficient sets depending on the characteristics of the image.

Claims 1 and 14 are reproduced below.

1. A method of diffusing an error generated from thresholding a grey level value representing a pixel, comprising the steps of:

(a) assigning an image characteristic to a pixel within an image;

(b) thresholding said pixel;

(c) generating an error value as a result of the threshold process in said step (b);

(d) selecting a set of weighting coefficients from a plurality of possible weighting coefficient sets based on the assigned image characteristic of said pixel; and

(e) diffusing the error value to adjacent pixels based on the selected set of weighting coefficients.

14. A method of binarizing a multi-level pixel, comprising the steps of:

(a) identifying areas of an image to be processed by a set of first image processing operations and areas of the image to be processed by a set of second image processing operations;

(b) processing the multi-level pixel with the set of first image processing operations when the multi-level pixel is in an area identified as to be processed by the set of first image processing operations and generating an error and binary value therefrom;

(c) processing the multi-level pixel with the set of second image processing operations when the multi-level pixel is in an area identified as to be processed by the set of second image processing operations and generating an error and binary value therefrom;

(d) distributing a weighted portion of the error to unprocessed pixels based on a first set of weighting coefficients when the multi-level pixel is processed by said step (b); and

(e) distributing a weighted portion of the error to unprocessed pixels based on a second set of weighting coefficients when the multi-level pixel is processed by said step (c).

The Examiner relies on the following prior art:

Williams et al. (Williams)	5,307,180	April 26, 1994
Kanno et al. (Kanno)	5,307,426	April 26, 1994

Appeal No. 1997-4067
Application 08/285,324

Claims 1-15 stand rejected under the judicially created doctrine of obviousness-type double patenting over claims 1-13 of Application 08/285,326, now U.S. Patent 5,608,821 ('821 patent), and claims 1-17 of copending Application 08/285,328 ('328 application).

Claims 14 stand rejected under 35 U.S.C. § 103 as being unpatentable over Williams and Kanno.

We refer to the Final Rejection (Paper No. 16) (pages referred to as "FR__") and the Examiner's Answer (Paper No. 22) (pages referred to as "EA__") for a statement of the Examiner's position and to the Appeal Brief (Paper No. 20) (pages referred to as "Br__") for a statement of Appellants' arguments thereagainst.

OPINION

Double patenting

The test for obviousness-type double patenting is whether the claimed subject matter of the application is obvious over what is covered by the patent claims (or the application claims in the case of a provisional obviousness-type double patenting rejection). "[T]he disclosure of a patent cited in support of a double patenting rejection

Appeal No. 1997-4067
Application 08/285,324

cannot be used as though it were prior art, even where the disclosure is found in the claims." General Foods v. Studiengesellschaft Kohle mbH, 972 F.2d 1272, 1281, 23 USPQ2d 1839, 1846 (Fed. Cir. 1992). "[P]atent claims are looked to only to see what has been patented, the subject matter which has been protected, not for something one may find to be disclosed by reading them." Id. at 1281, 23 USPQ at 1846, citing In re Aldrich, 398 F.2d 855, 859, 158 USPQ 311, 314 (CCPA 1968). What has been patented is the subject matter covered by the claims. The question to be asked in the analysis is whether the subject matter covered by the present claims are obvious over the subject matter covered by the claims of either the '821 patent or the '328 application.

We are not aware of any legal support for the Examiner's use of a hypothetical "claim" of the type constructed here. The hypothetical claim does not represent the actual claims of the present application, the '328 application, or the '821 patent. It may true that the limitations represent commonly disclosed subject matter, but the use of the term "claim" is erroneous and confusing.

Appeal No. 1997-4067
Application 08/285,324

Obviousness-type double patenting must use the claims. It appears that the Examiner's rejection is based on an improper application of In re Schneller, 397 F.2d 350, 158 USPQ 210 (CCPA 1968).

Schneller is a very special case of obviousness-type double patenting. Schneller applies to those situations where: (1) the subject matter recited in the claims of the application is fully disclosed and covered by a claim in the patent (i.e., there has been no improvement or modification invented after filing and the application claim reads on subject matter which has been protected by a patent claim); and (2) there is no reason why appellant was prevented from presenting the same claims for examination in the issued patent (i.e., there is no justification for extending the protection, such as the existence of a restriction requirement). The Patent and Trademark Office has applied the term "non-'obviousness-type'" (as opposed to "obviousness-type") double patenting to the factual situation in Schneller in the past, MPEP § 804 (6th ed. Jan. 1995), pages 800-15, -16, but does not now use this

Appeal No. 1997-4067
Application 08/285,324

label, MPEP § 804 (7th ed. July 1998), pages 800-21 through 800-23.

The first condition is satisfied as we show by comparing claims 1 and 4 of the present application with claim 1 of the '821 patent (note that we use the claims). The analysis is the same for the '328 application. Claim 4 of the present application recites that step (a) of claim 1 comprises the three substeps (a1), (a2), and (a3). This appears to be an obvious error because steps (a1)-(a3) have nothing to do with assigning an image characteristic. Apparently, claim 4 should refer to step (b) and we analyze the claims according to this interpretation; i.e., steps (a1)-(a3) should be labeled (b1)-(b3). Then we note the following correspondence between limitations and assign the letters to the limitations, where "--" indicates there is no corresponding limitation.

<u>Letter</u>	<u>Present Appl. Claims 1 and 4</u>	<u>'821 patent Claim 1</u>
A	1(a)	--
B	1(b)-> 4(b1) 4(b2) 4(b3)	1(a) 1(b) 1(c)
C	1(c)	1(d) (also requires error resolution corresponding to

Appeal No. 1997-4067
Application 08/285,324

		first resolution)
D	1(d)	--
E	1(e)- diffusing	1(e)
E'	1(e)- based on	--
	weighting	
	coefficients	

Thus, roughly, claim 4 of the present application (which incorporates by reference the limitations of claim 1) recites limitations ABCDEE' and claim 1 of the '821 patent recites BCE. We assume that the '821 patent discloses limitations ADE. BCE of the '821 patent "covers" the limitations ABCDEE' of claim 4 now sought to be patented. Schneller had a similar situation where the claims of the patent were directed to ABCX and the application claims to ABCXY were held to extend the term of patent protection because ABCXY was disclosed to be the best mode in the patent and Schneller had clearly intended to cover and protect that embodiment with the claim to ABCX.

However, the second condition of Schneller is not satisfied. Here, the present invention, the '328 application, and the application on which the '821 patent is based were all filed the same day and to different inventions. Thus, there is good reasons why the present

Appeal No. 1997-4067
Application 08/285,324

invention was not claimed in the '821 patent or the '328 application. As Appellants point out (Br13-14), they were not trying to gain an unjustified or improper timewise extension of the right to exclude by filing separate applications as in Schneller. Thus, this is not a special Schneller fact situation.

Because claim 1 of the present application contains limitations in addition to those in claim 1 of the '821 patent, the Examiner must shown how those limitations are obvious. It is the usual case that subject matter within the scope of a claim must be shown to be nonobvious; e.g., if BCE represents a telephone and ABCDEE' represents a touch-tone telephone, it is necessary to demonstrate the obviousness of the combination with the additional limitations to ADE'. The obviousness-type double patenting rejection over the '328 application has the same problems; i.e., the claims in the present application are narrower than those in the '328 application. The Examiner has not addressed the obviousness of limitations (a), (d), and (e) and, accordingly, has failed to establish a prima facie case of obviousness-type double patenting over the claimed

Appeal No. 1997-4067
Application 08/285,324

subject matter of the '821 patent and the '328 application.
The rejection of claims 1-15 is reversed.

It is noted that if the situation were reversed and the present application had issued before the application on which the '821 patent is based, the claims in the application on which the '821 patent is based would have been subject to a straightforward obviousness-type double patenting rejection. That is, claim 1 of the '821 patent to the subject matter BCE would be anticipated by (and, hence, obvious over) the subject matter ABCDEE' of claim 4 of the present application.

Obviousness

Williams discloses a digital signal processing apparatus having a segmentation block 30 which parses the incoming data to determine (1) areas of the image which are representative of a halftone input region to be processed by a first kind of image processing effect (e.g., a low pass filter to remove screen patterns), and (2) areas of the image which are representative of a text portion to be processed by a second kind of image processing effect (e.g., an edge enhancement filter) (col. 4, line 56 to col. 5,

line 3). Thus, Williams discloses step (a) and discloses steps (b) and (c) except for the last limitation of "generating an error and binary value therefrom." Williams also fails to disclose steps (d) and (e).

The Examiner relies on Kanno. Kanno discloses binarizing a multi-level pixel (B output at 41), generating an error therefrom (EB), and using error diffusion. Kanno notes that a maximum density difference of pixels within a predetermined 4x4 area surrounding the pixel of interest is large for a character (text) region having a high contrast and is small for a photograph region having a gray scale (col. 2, lines 38-42). Kanno uses the average maximum density difference signal (AD) to adjust quantization of the pixel of interest to either the quantization error (EB) (in a photograph region) or zero (in a text region) (col. 5, lines 55-60). When the compensation error signal (CE) is not zero (i.e., for a photograph region), weighting coefficients from the weighting coefficient memory 7 are used to distribute the error to surrounding pixels (col. 6, lines 12-30). The weighting coefficient memory 7 contains only a single set of weighting coefficients. Thus, when a

Appeal No. 1997-4067
Application 08/285,324

pixel is present in a photograph region, error diffusion is used, and when a pixel is present in a text region, the image signal is quantized by a predetermined threshold value (col. 8, lines 1-11) (because the compensation error (CE) is zero).

The Examiner's position is that the weighting coefficients from the weighting coefficient memory 7 multiplied by the compensation error signal (CE), which changes depending on the image region type according to the average maximum density differential signal (AD), constitute first and second sets of weighting coefficients (FR10-11; EA8). The Examiner concludes that it would have been obvious to apply Kanno's method in the segmentation processing of Williams.

Since Kanno shows segmentation of an image into text and photograph portions, it is not clear why the Examiner feels it is necessary to combine Kanno with Williams. Nevertheless, the combination of references is not the problem.

Appellants argue (Br18-19): "[Kanno's] process of correcting the error does not affect how the error is

distributed to adjacent pixels, but merely affects the total amount of error available to be distributed. On the other hand, the present invention claims that the weighting coefficients are changed, and thus, the channels of distribution themselves are affected." Appellants characterize Kanno as a static distribution process because the distribution of error to surrounding pixels cannot be changed.

We agree with Appellants that changing the error in Kanno does not meet the limitations of distributing a weighted portion of the error based on first and second sets of weighting coefficients. Kanno only has a single set of weighting coefficients. Kanno does not operate to produce the same results as the claimed invention because the distribution of error to surrounding pixels cannot be changed by using different sets of coefficients.

Furthermore, we note that when a pixel is present in a text region in Kanno, the compensation error signal (CE) is zero, so the product of CE and the weighing coefficients will be zero, and no weighted portion of the error will be distributed to surrounding pixels. This is like Appellants'

description of the Background of the Invention

(specification, page 2): "Normally, this identification process [i.e., segmentation] is necessary so that the picture aspect of the document can be screened and the text aspect of the document can be threshold." That is, there is effectively no error diffusion for pixels in a text region. Instead, the image signal is quantized by a predetermined threshold value (col. 8, lines 1-11). The terms eA, eB, eC, eD (col. 6, lines 25-30) are only for the case when EB is not zero (a photograph region). For these reasons, we conclude that the Examiner has failed to establish a prima facie case of obviousness. The rejection of claim 14 is reversed.

CONCLUSION

The rejection of claims 1-15 on the ground of obviousness-type double patenting is reversed.

The rejection of claim 14 under 35 U.S.C. § 103 is reversed.

REVERSED

Appeal No. 1997-4067
Application 08/285,324

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Appeal No. 1997-4067
Application 08/285,324

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